```
SSSSSSSSSSSS    YYY        YYY    SSSSSSSSSSSS
SSSSSSSSSSSS    YYY        YYY    SSSSSSSSSSSS
SSSSSSSSSSSS    YYY        YYY    SSSSSSSSSSSS
SSS             YYY        YYY    SSS
SSS             YYY        YYY    SSS
SSS             YYY        YYY    SSS
SSS               YYY    YYY      SSS
SSS               YYY    YYY      SSS
SSS               YYY    YYY      SSS
  SSSSSSSS          YYY           SSSSSSSS
  SSSSSSSS          YYY           SSSSSSSS
  SSSSSSSS          YYY           SSSSSSSS
         SSS        YYY                 SSS
         SSS        YYY                 SSS
         SSS        YYY                 SSS
         SSS        YYY                 SSS
         SSS        YYY                 SSS
         SSS        YYY                 SSS
SSSSSSSSSSSS        YYY           SSSSSSSSSSSS
SSSSSSSSSSSS        YYY           SSSSSSSSSSSS
SSSSSSSSSSSS        YYY           SSSSSSSSSSSS
```

_S

Ps
--

YZ

ZS

ZS

ZS

ZS

ZS

ZS

ZS

ZS

ZS

ZS

ZS

ZS

FILEID**SYSCHGMOD

```
 SSSSSSS  YY      YY  SSSSSSS  CCCCCCC  HH      HH  GGGGGGG  MM       MM  000000  DDDDDDD
 SSSSSSS  YY      YY  SSSSSSS  CCCCCCC  HH      HH  GGGGGGG  MM       MM  000000  DDDDDDD
SS         YY    YY  SS        CC       HH      HH  GG       MMMM   MMMM  00    00  DD     DD
SS         YY    YY  SS        CC       HH      HH  GG       MMMM   MMMM  00    00  DD     DD
SS          YY  YY   SS        CC       HH      HH  GG       MM  MM MM    00    00  DD     DD
SS          YY  YY   SS        CC       HH      HH  GG       MM  MM MM    00    00  DD     DD
 SSSSSS       YY      SSSSSS    CC       HHHHHHHHHH  GG       MM       MM  00    00  DD     DD
 SSSSSS       YY      SSSSSS    CC       HHHHHHHHHH  GG       MM       MM  00    00  DD     DD
       SS     YY           SS   CC       HH      HH  GG GGGGG  MM       MM  00    00  DD     DD
       SS     YY           SS   CC       HH      HH  GG GGGGG  MM       MM  00    00  DD     DD
       SS     YY           SS   CC       HH      HH  GG    GG  MM       MM  00    00  DD     DD
       SS     YY           SS   CC       HH      HH  GG    GG  MM       MM  00    00  DD     DD
 SSSSSSS  YY      SSSSSSS  CCCCCCC  HH      HH  GGGGGG   MM       MM  000000  DDDDDDD   ....
 SSSSSSS  YY      SSSSSSS  CCCCCCC  HH      HH  GGGGGG   MM       MM  000000  DDDDDDD   ....

LL           IIIIII   SSSSSSS
LL           IIIIII   SSSSSSS
LL             II    SS
LL             II    SS
LL             II    SS
LL             II    SS
LL             II     SSSSSS
LL             II     SSSSSS
LL             II          SS
LL             II          SS
LL             II          SS
LL             II          SS
LLLLLLLLLL   IIIIII   SSSSSSS
LLLLLLLLLL   IIIIII   SSSSSSS
```

SYS
V04

SYSCHGMOD
V04-000

- SYSTEM SERVICES TO CHANGE MODE ^L 4   16-SEP-1984 01:46:59 VAX/VMS Macro V04-00   Page 1
                                         5-SEP-1984 03:49:20 [SYS.SRC]SYSCHGMOD.MAR;1   (1)

```
0000      1              .TITLE  SYSCHGMOD - SYSTEM SERVICES TO CHANGE MODE
0000      2              .IDENT  'V04-000'
0000      3
0000      4
0000      5      ;*****************************************************************************
0000      6      ;*                                                                          *
0000      7      ;*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
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0000     19      ;*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT   *
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0000     23      ;*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                 *
0000     24      ;*                                                                          *
0000     25      ;*                                                                          *
0000     26      ;*****************************************************************************
0000     27      ;
0000     28      ;
0000     29      ;++
0000     30      ; FACILITY:
0000     31      ;
0000     32      ; SYSTEM SERVICES TO CHANGE MODE
0000     33      ;
0000     34      ; ABSTRACT:
0000     35      ;
0000     36      ;       CHANGE MODE TO EXECUTIVE SYSTEM SERVICE
0000     37      ;       CHANGE MODE TO KERNEL SYSTEM SERVICE
0000     38      ;
0000     39      ; AUTHOR: D. N. CUTLER, CREATION DATE: 30-SEP-76
0000     40      ;
0000     41      ; MODIFIED BY:
0000     42      ;
0000     43      ;       V02-003 STJ0115         Steven T. Jeffreys      02-Sep-1981
0000     44      ;               Liberal rewrite to increase speed.  Optimized for $CMKRNL.
0000     45      ;
0000     46      ;       V02-002 KDM0037         Kathleen D. Morse       12-Feb-1981
0000     47      ;               Change non-kernel mode references to SCH$GL_CURPCB
0000     48      ;               to use CTL$GL_PCB instead.
0000     49      ;
0000     50      ;
0000     51      ;--
```

```
                   0000      53 ;
                   0000      54 ; MACRO LIBRARY CALLS
                   0000      55 ;
                   0000      56
                   0000      57        $PCBDEF                            ;DEFINE PCB OFFSETS
                   0000      58        $PRVDEF                            ;DEFINE PRIVILEGE BITS
                   0000      59        $PSLDEF                            ;DEFINE PROCESSOR STATUS FIELDS
                   0000      60        $SFDEF                             ;DEFINE STACK FRAME OFFSETS
                   0000      61        $SSDEF                             ;DEFINE SYSTEM STATUS VALUES
                   0000      62
                   0000      63 ;
                   0000      64 ; LOCAL SYMBOLS
                   0000      65 ;
                   0000      66 ; ARGUMENT LIST OFFSET DEFINITIONS
                   0000      67 ;
                   0000      68
        00000004   0000      69 ROUTIN=4                                 ;ADDRESS OF ROUTINE TO BE EXECUTED
        00000008   0000      70 ARGLST=8                                 ;ADDRESS OF ARGUMENT LIST
```

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SYSCHGMOD   - SYSTEM SERVICES TO CHANGE MODE   16-SEP-1984 01:46:59 VAX/VMS Macro V04-00   Page   3
V04-000   CHANGE MODE TO EXECUTIVE AND KERNEL   5-SEP-1984 03:49:20 [SYS.SRC]SYSCHGMOD.MAR;1   (1)

```
                                      0000        72               .SBTTL  CHANGE MODE TO EXECUTIVE AND KERNEL
                                      0000        73        ;+
                                      0000        74        ; EXE$CMEXEC - CHANGE MODE TO EXECUTIVE
                                      0000        75        ; EXE$CMKRNL - CHANGE MODE TO KERNEL
                                      0000        76        ;
                                      0000        77        ; THESE SERVICES PROVIDE THE CAPABILITY TO CHANGE THE CURRENT PROCESSOR
                                      0000        78        ; ACCESS MODE AND CALL A SPECIFIED ROUTINE WITH A SPECIFIED ARGUMENT LIST.
                                      0000        79        ;
                                      0000        80        ; INPUTS:
                                      0000        81        ;
                                      0000        82        ;     ROUTIN(AP) = ADDRESS OF ROUTINE TO BE EXECUTED AT SPECIFIED MODE.
                                      0000        83        ;     ARGLST(AP) = ADDRESS OF ARGUMENT LIST TO BE PASSED TO ROUTINE.
                                      0000        84        ;
                                      0000        85        ;     IF ENTRY AT EXE$CMKRNL, THEN
                                      0000        86        ;
                                      0000        87        ;     R4 = CURRENT PROCESS PCB ADDRESS.
                                      0000        88        ;
                                      0000        89        ; OUTPUTS:
                                      0000        90        ;
                                      0000        91        ;     R0 LOW BIT CLEAR INDICATES FAILURE TO PERFORM SPECIFIED ROUTINE.
                                      0000        92        ;
                                      0000        93        ;         R0 = SS$_NOPRIV - PROCESS DOES NOT HAVE PRIVILEGE TO CHANGE
                                      0000        94        ;                 TO THE SPECIFIED ACCESS MODE.
                                      0000        95        ;
                                      0000        96        ;         R0 = FINAL VALUE RETURNED BY EXECUTED ROUTINE.
                                      0000        97        ;
                                      0000        98        ;     R0 LOW BIT SET INDICATES SUCCESSFUL COMPLETION.
                                      0000        99        ;
                                      0000       100        ;         R0 = FINAL VALUE RETURNED BY EXECUTED ROUTINE.
                                      0000       101        ;-
                                      0000       102
                                      0000       103               .ENABLE LSB
                                 0010 0000       104               .ENTRY  EXE$CMEXEC,^M<R4>
 54  00000000'GF  D0            0002  105               MOVL    G^CTL$GL_PCB,R4              ;GET CURRENT PCB ADDRESS
               01  E0            0009  106               BBS     #PRV$V_CMEXEC,-              ;BRANCH IF PROCESS HAS CMEXEC PRIVILEGE
     0A 6C B4                    000B  107                       @PCB$L_PHD(R4),20$          ;
           02  11                000E  108               BRB     10$                         ;CONTINUE IN COMMON CODE
                                 0010  109               .ENTRY  EXE$CMKRNL,^M<R4>
                                 0010
           50  DC                0012  110 10$:           MOVPSL  R0                          ;GET PSL
     10 50  17  E0               0014  111               BBS     #PSL$V_PRVMOD+1,R0,30$      ;BRANCH IF CALLER NOT IN EXEC OR KERNEL
                                 0018  112
                                 0018  113        ;       CALL THE SPECIFIED ROUTINE, PASSING IT THE SPECIFIED ARGUEMENT LIST.
                                 0018  114        ;       IF THE ROUTINE RETURNS A SUCCESS STATUS IN R0, TAKE A FAST EXIT PATH
                                 0018  115        ;       OUT OF THE SYSTEM SERVICE.  THE IDEA IS TO AVOID A "RET" INSTRUCTION,
                                 0018  116        ;       WHICH IS FAR SLOWER THAN THE "MOVL" AND "ADDL".  IF THE ROUTINE
                                 0018  117        ;       RETURNS A FAILURE STATUS, "RET" BACK TO THE SYSTEM SERVICE DISPATCHER
                                 0018  118        ;       TO USE THE SPECIAL SYSTEM SERVICE FAILURE CODE PATH.
                                 0018  119        ;
 04 BC  08 BC  FA               0018  120 20$:           CALLG   @ARGLST(AP),@ROUTIN(AP)     ;CALL SPECIFIED ROUTINE
       10 50  E9                001D  121               BLBC    R0,40$                      ;IF ERROR, THEN TAKE 'NORMAL' EXIT PATH
     5D  0C AD  D0               0020  122               MOVL    SF$L_SAVE_FP(FP),FP         ;RESTORE FRAME POINTER
        5E  00'  C0              0024  123               ADDL    S^#EXE$C_CMSTKSZ,SP        ;CLEAN STACK BACK TO PC, PSL
           02                    0027  124               REI                                 ;RETURN FROM THE SYSTEM SERVICE CALL
           00  E0                0028  125 30$:           BBS     #PRV$V_CMKRNL,-             ;BRANCH IF PROCESS HAS CMKRNL PRIVILEGE
     EB 6C B4                    002A  126                       @PCB$L_PHD(R4),20$          ;
     50 24  3C                   002D  127               MOVZWL  #SS$_NOPRIV,R0              ;SET ERROR STATUS
           04                    0030  128 40$:           RET                                 ;
```

SYSCHGMOD
V04-000

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- SYSTEM SERVICES TO CHANGE MODE   16-SEP-1984 01:46:59 VAX/VMS Macro V04-00   Page 4
CHANGE MODE TO EXECUTIVE AND KERNEL   5-SEP-1984 03:49:20 [SYS.SRC]SYSCHGMOD.MAR;1   (1)

```
0031   129
0031   130              .DISABLE LSB
0031   131              .END
```

```
ARGLST                           = 00000008
CTL$GL_PCB                         *******  X   01
EXE$CMEXEC                        00000000 RG   01
EXE$CMKRNL                        00000010 RG   01
EXE$C_CMSTKSZ                      *******  X   01
PCB$L_PHD                         = 0000006C
PRV$V_CMEXEC                      = 00000001
PRV$V_CMKRNL                      = 00000000
PSL$V_PRVMOD                      = 00000016
ROUTIN                           = 00000004
SF$L_SAVE_FP                      = 0000000C
SS$_NOPRIV                        = 00000024
```

```
                                 +-----------------+
                                 ! Psect synopsis !
                                 +-----------------+
```

```
PSECT name                  Allocation          PSECT No.  Attributes
----------                  ----------          ---------  ----------
.  ABS  .                   00000000 (    0.)   00 (  0.)  NOPIC   USR   CON   ABS   LCL NOSHR NOEXE NORD   NOWRT NOVEC BYTE
.  BLANK  .                 00000031 (   49.)   01 (  1.)  NOPIC   USR   CON   REL   LCL NOSHR EXE   RD     WRT   NOVEC BYTE
$ABS$                       00000000 (    0.)   02 (  2.)  NOPIC   USR   CON   ABS   LCL NOSHR EXE   RD     WRT   NOVEC BYTE
```

```
                          +----------------------------+
                          ! Performance indicators !
                          +----------------------------+
```

```
Phase                   Page faults   CPU Time      Elapsed Time
-----                   -----------   --------      ------------
Initialization                  29    00:00:00.06   00:00:00.53
Command processing             105    00:00:00.50   00:00:05.00
Pass 1                         249    00:00:06.07   00:00:18.43
Symbol table sort                0    00:00:01.01   00:00:03.54
Pass 2                          41    00:00:01.08   00:00:03.43
Symbol table output              2    00:00:00.04   00:00:00.04
Psect synopsis output            2    00:00:00.02   00:00:00.02
Cross-reference output           0    00:00:00.00   00:00:00.00
Assembler run totals           430    00:00:08.79   00:00:31.00
```

The working set limit was 1200 pages.
33589 bytes (66 pages) of virtual memory were used to buffer the intermediate code.
There were 40 pages of symbol table space allocated to hold 689 non-local and 4 local symbols.
131 source lines were read in Pass 1, producing 18 object records in Pass 2.
12 pages of virtual memory were used to define 11 macros.

```
                          +------------------------------+
                          ! Macro library statistics !
                          +------------------------------+
```

```
Macro library name                        Macros defined
------------------                        --------------
_$255$DUA28:[SYS.OBJ]LIB.MLB;1                   1
_$255$DUA28:[SYSLIB]STARLET.MLB;2                7
TOTALS (all libraries)                           8
```

761 GETS were required to define 8 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS$:SYSCHGMOD/OBJ=OBJ$:SYSCHGMOD MSRC$:SYSCHGMOD/UPDATE=(ENH$:SYSCHGMOD)+EXECML$/LIB

SYSCANEVT
LIS

SYSCREPRC
LIS

SYSCHKPRO
LIS

SYSCREDEL
LIS

SYSCANCEL
LIS

SYSCOMMON
LIS

SYSCHGMOD
LIS